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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/941,533

08/29/2001

Ammar Derreaa

MTI-31533

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7590

02/03/2005

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EXAMINER

FOURSON III, GEORGE R

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 02/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,533

Applicant(s)

DERRAA, AMMAR

Examiner

George Fourson

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-73 and 101-129 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-73 and 101-129 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1,2,3-9,11,12,13,14,16,17,18,19,21,22,23,24,26,27,28,30,31,34,35,37,38,40-45,49,68,71,101-105,112,114,116,120 and 121 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al in view of Hu et al.

The rejection is maintained as stated in the paper mailed 8/17/04.

Applicant argues that the temperature employed by Hu et al (680°C) results in the same chlorine concentration and resistivity as the lower temperature employed by Wang et al so it would not have been obvious to one of ordinary skill in the art to use the higher temperature. However, in view of these teachings it would have been obvious to one of ordinary skill in the art to use the higher temperature of Hu et al, which is disclosed to be for the same purpose as the purpose disclosed by Wang et al for the step, with the expectation that the same or similar results would be obtained.

Applicant argues that Wang discloses that the use of higher temperatures in the TiN deposition step gives worse step coverage and may result in undesirable atomic interdiffusion in the previously formed layers. However, this is a disclosure that the higher temperatures are not preferred as opposed to a disclosure that the higher temperatures render the process inoperable. Note the use of the term "undesirable" in the pointed to disclosure, for example.

Claim 115 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al in combination with Hu et al as applied to claims 1,2,3-9,11,12,13,14,16,17,18, 19,21,22,23,24,26,27,28,30, 31,34,35,37,38, 40-45,49,68,71,101-105,112,114,116,120 and 121 above, and further in view of Leem or Japan 5-267220 (Japan '220).

The rejection is maintained as stated in the paper mailed 8/17/04.

Claims 10,15,20,25,29,32,39,50,51-59,61,62,63,67,66,69,70,73,106,107,108, 109,72,108,109,110,111,113,117,118,119,122 and 123 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al in view of Hu et al as applied to claims 1,2,3-9,11,12,13,14,16,17,18, 19,21,22,23,24, 26,27,28,30, 31,34,35,37,38, 40-45,49,68,71,101-105,112,114,116,120 and 121 above, and further in view of Leem or Japan '220.

The rejection is maintained as stated in the paper mailed 8/17/04.

Claims 36,46,47,48,65 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al in view of Hu et al as applied to claims 1,2,3-9,11,12,13,14,16,17,18, 19,21,22,23,24,26,27,28,30, 31,34,35,37,38, 40-45,49,68,71,101-105,112,114,116,120 and 121 above, and further in view of Doan et al.

Wang et al fails to disclose formation of the TiSi_2 layer by PECVD or sputtering.

Doan et al discloses formation of a titanium silicide layer by PECVD [0034] or sputtering [0007] to form a contact.

The rejection is maintained as stated in the paper mailed 8/17/04.

To further clarify, the claim encompasses plasma enhanced CVD, otherwise known as "plasma assisted CVD" as disclosed by Doan at [0034].

Applicant requests withdrawal of the rejection of claims 46-48 on the basis that the claims do not require PECVD. However, the claims encompass PECVD.

Claims 60,124,125,126 and 127 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al in view of Hu et al as applied to claims 1,2,3-9,11,12,13,14,16,17,18, 19,21,22,23,24,26,27,28,30, 31,34,35,37,38, 40-45,49,68,71,101-105,112,114,116,120 and 121 above, and further in view of applicant's admitted prior art, AAPA.

The rejection is maintained as stated in the paper mailed 8/17/04.

Applicant requests withdrawal of the rejection of claims 124 and 127 on the basis that the claims do not require source/drain contact or interconnect formation. However, the claims encompass formation of a source/drain contact.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened


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statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. See MPEP 203.08.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner George Fourson whose telephone number is (703) 308-2544. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794. The fax number for this group is (703)308-7722 (or extensions 7724, 3431 or 3432) for regular communications and (703)308-7382 for after final communications.


George Fourson
Primary Examiner
Art Unit 2823

GFourson
January 28, 2005